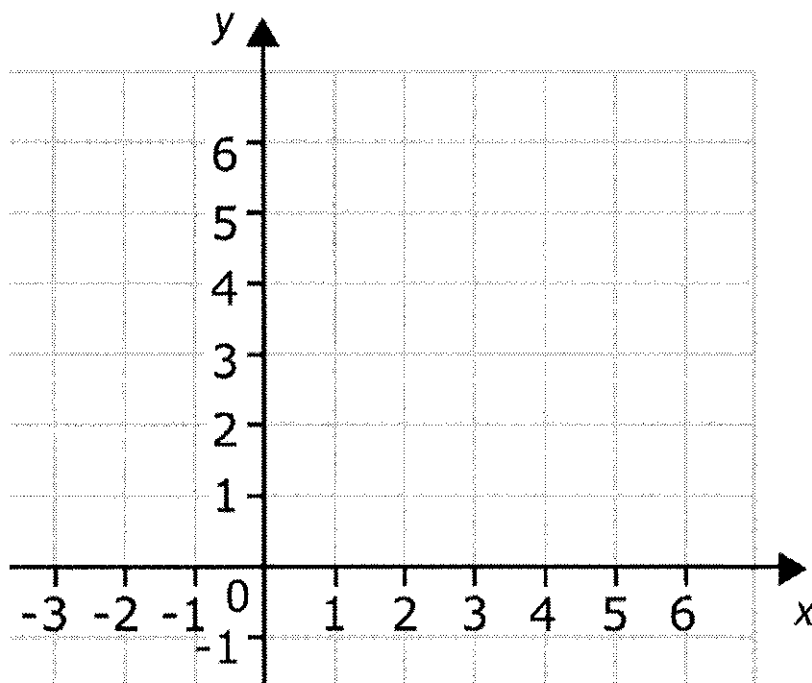


TOPIC 1: Midpoint and Distance

1. A quadrilateral has vertices $P(0,2)$, $Q(2,-1)$, $R(8,3)$, and $S(6,6)$.
 - a. What can you determine about the opposite sides of PQRS? Show work to support your answer. (Sketch a diagram of the quadrilateral and find the length of each side. What do you notice about the length of the opposite sides?)
 - b. What can you determine about the diagonals of PQRS? Show work to support your answer. (Look to your diagram... which segments are diagonals? Find the length of each of those segments.)
 - c. What type of quadrilateral is PQRS?
 - d. Graph PQRS on a coordinate plane. Find the midpoint of each side length. Connect adjacent midpoints. What figure did you create? How do you know?

TOPIC 2: Midsegment Theorem

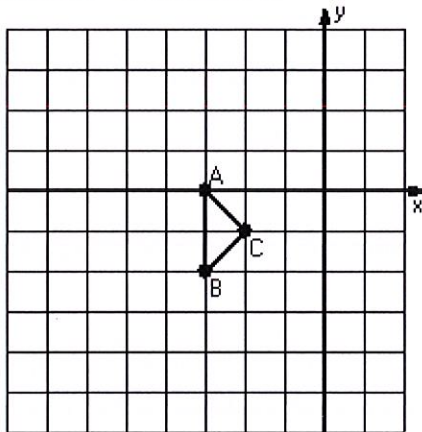
2. Draw a triangle on the coordinate plane and create one of its midsegments.
 - a. Verify that the midsegment is parallel to the third side of the triangle (slope).
 - b. Verify that the midsegment is half the length of the third side (distance).
 - c. Verify that the two triangles are similar.



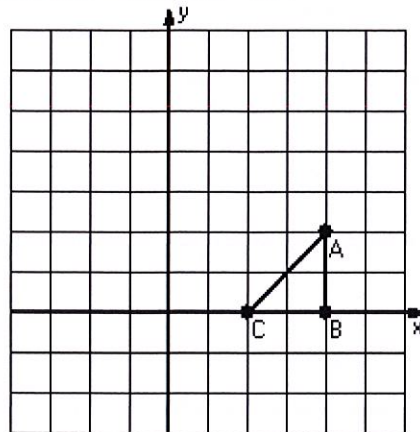
TOPIC 3: Dilations

Directions: Perform the dilation according to the scale factor and center of dilation.

3) Dilation scale = 4, center $D(-3, -1)$



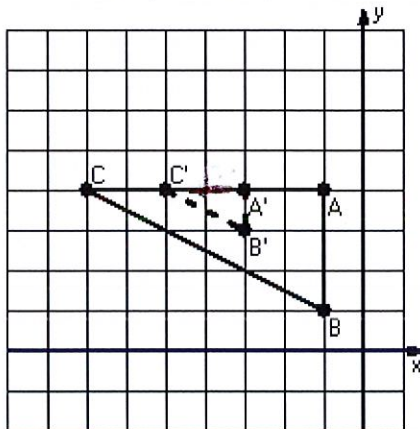
4) Dilation scale = $1/2$, center $D(-2, 2)$



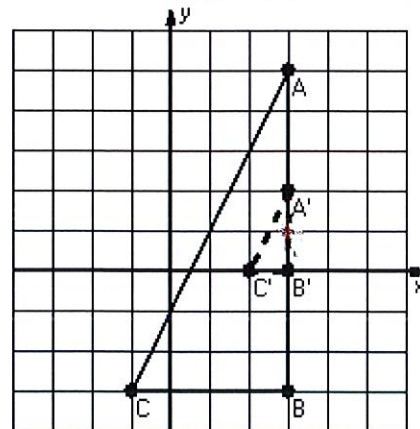
* Choose one problem (#3 or 4) and verify the scale factor by finding the length of two corresponding sides.

Directions: Find the center of dilation and scale factor for the given image and pre-image.

5) Dilation scale = $1/2$, center $D(1, 1)$

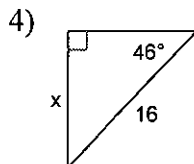
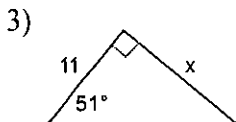
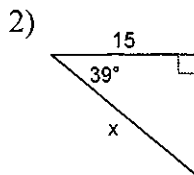
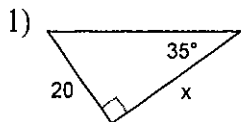


6) Dilation scale = 2 , center $D(1, 1)$

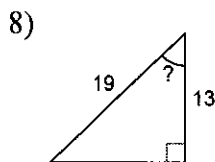
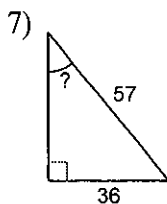
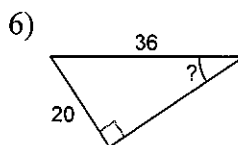
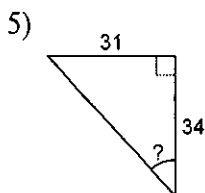


TOPIC 4: Introduction to Trigonometry

Find the missing side. Round to the nearest tenth.



Find the measure of the indicated angle to the nearest degree.



9. Are the three triangles below similar? How do you know? Why is the sine, cosine, or tangent of 30° the same for each triangle even though they appear to be different sizes?

